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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/829,148	04/20/2004	Roger J. Malik	690-002	5092

7590 06/16/2006

Ward & Olivo
708 Third Avenue
New York, NY 10017

EXAMINER

BUEKER, RICHARD R

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 06/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/829,148

Applicant(s)

MALIK, ROGER J.

Examiner

Richard Bueker

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 152 is/are pending in the application.
- 4a) Of the above claim(s) 5-7,25,32-39,60-62,84-91,114 and 136-143 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-24, 26-31, 40-59, 63-83, 92-113, 115-135 and 144-152 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/18/04.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

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Claims 5-7, 25, 32-39, 60-62, 84-91, 114 and 136-143 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on March 9, 2006. It is noted, however, that claims 61 and 62, which are dependent on non-elected claim 60, are also non-elected.

Claims 8, 17, 18, 41, 42, 45, 59, 66, 81-83, 93, 94, 98, 106, 113, 120, 145, 146, 149 and 150 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 8, 66 and 120 the phrase "concentric configuration" is vague and indefinite because it fails to indicate what the part is concentric with respect to or relative to. In claims 17 and 18, the phrase "said refractory clamps" is vague and indefinite because it lacks proper antecedent basis. In claim 45, "said conducting probes" lacks proper antecedent basis. In claims 93, 94, 98, 145, 146 and 150, the phrase "said linear motion vacuum feedthrough" lacks proper antecedent basis and is vague and indefinite. In claims 59 and 113, "wherein ceramic coating is said insulator" is non-idiomatic, and "said insulator" lacks proper antecedent basis. In claims 81-83 the phrase "said heater means" is vague and indefinite because it does not make clear which heater means it refers to. In claim 106, "said refractory material" lacks proper antecedent basis. In claim 149, "said conducting probes" lacks proper antecedent basis.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 8-20, 29-31, 40-53, 55, 66-82, 92-107, 109, 115, 116, 118-135 and 144-152 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sarraf (5,558,720) taken in view of Zega (4,112,137), De Lange (2,508,500) and Dale (3,634,647), and in further view of Bennet (2,568,578) and Mercer (5,407,000).

Sarraf (see the Fig.) discloses a liquid metal evaporation source for use in MBE process. Sarraf teaches (col. 1, lines 42-45) that MBE evaporators are limited by source depletion. Sarraf solves this problem by providing a heated supply tank of liquid metal melt along with a feed pipe for continuously replenishing the evaporator. Sarraf uses a capillary wick to pump (see col. 2, lines 30-32) the liquid metal to the evaporator, and he doesn't discuss the use of a piston to push the liquid metal out of the supply tank. Zega (see Fig. 2, for example), De Lange (see Figs. 2 and 3, for example) and Dale (see Fig. 5, for example) all also disclose vaporizers of the type that are continuously supplied with liquid metal from a heated supply tank by pushing the liquid into the feed pipe. Zega teaches (see paragraph bridging cols. 6 and 7) that this type of recharging system can be applied to feeding any source of evaporation of relatively low melting point. Therefore, it would have been obvious to use this type of continuous supply for an MBE vaporizer of the type disclosed by Sarraf. Also, Zega and De Lange teach that such a supply system should be provided with a separate heater on the feed pipe. Also, De Lange (see element 11 of Fig. 2) and Dale (see col. 7, lines 14-19) teach that a piston in the supply tank can be used to push the liquid metal from the supply

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tank into the feed tube. It would have been obvious to use a separately heated feed tube and a piston to continuously supply an MBE evaporator of the type disclosed by Sarraf, because the secondary references teach that these expedients can successfully be used to continuously supply an evaporator as desired by Sarraf. Also, Bennet (see Fig. 1, for example) and Mercer (see Fig. 1, for example) teach that a molten metal supply pipe should be provided with its own heater and thermocouple based heater control means, to make sure that the pipe is kept within a temperature range in which it will not become cool enough for the metal to solidify, and also will not become too hot (see Bennet at col. 1, lines 23-27, for example). It would have been obvious to one skilled in the art to provide the molten metal supply pipe of Sarraf, Zega, De Lange and Dale with its own heater and heater control, for the desirable purpose of preventing both solidification and local over-heating, as taught by Bennet and Mercer. Regarding the use of a conducting probe to sense the level of liquid in the evaporator, De Lange (see Fig. 1 and col. 4, lines 38-44) teaches this type of level sensor for sensing the level in an evaporator. De Lange also teaches (col. 4, lines 55-60) that this type of level sensor can be used to control the movement of a piston feeder of the type shown in De Lange's Fig. 2. It would have been obvious to use this type of prior art liquid level sensor to control the liquid level in any of the prior art evaporators described in the cited references. It is noted also that claim 1 for example does not positively recite the conducting probe as part of the claimed apparatus, but instead refers to the conducting probe in terms of a process limitation (i.e. "wherein at least one conducting probe is used") which is only a recitation of intended use that does not so limit the claimed

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apparatus combination. The same is true for the description of intended use that follows the phrase "can be used" in line 11 of claim 1. The elements referred to there are not part of the claimed apparatus. Regarding the use of graphite (which is a refractory material) as recited in claim 3, Zega (col. 8, line 17) teaches that this is a material that can successfully be used for vapor sources. Also, any particular temperature or relative temperature recited in the present apparatus claims represents a recitation of intended use of the claimed apparatus and does not so limit the apparatus claims. Also, the use of flanges to connect machine parts along with nuts, bolts or champs would have been obvious to one of ordinary skill in the mechanical arts.

Claims 4, 29-31, 51-54, 81-83, 99, 105-108 and 133-135 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sarraf (5,558,720) taken in view of Zega (4,112,137), De Lange (2,508,500) and Dale (3,634,647) and in further view of Bennet (2,568,578) and Mercer (5,407,000) for the reasons stated above, and taken in further view of Chow (5,031,229) (see Fig. 1, for example) who teaches the use of pyrolytic graphite to form the heater elements on the outer surface of an evaporator. It would have been obvious to one skilled in the art to use the pyrolytic graphite heater of Chow as the heater 18 of Sarraf because Chow teaches that his heater provides a more uniform temperature.

Claims 21-24, 26, 27, 56-59 and 110-113 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sarraf (5,558,720) taken in view of Zega (4,112,137), De Lange (2,508,500) and Dale (3,634,647) and in further view of Bennet (2,568,578) and Mercer (5,407,000), and taken in further view of Bahney (2,195,071) who teaches (see

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paragraph bridging pages 4 and 5) that a probe for detecting molten metal liquid level desirably should be provided with a ceramic insulation coating, and he also teaches that the probe can be constructed of graphite, and it would have been obvious to incorporate these suggestions into the liquid level sensor suggested by De Lange.

Claims 28, 63-65, 116 and 117 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sarraf (5,558,720) taken in view of Zega (4,112,137), De Lange (2,508,500) and Dale (3,634,647) and in further view of Bennet (2,568,578) and Mercer (5,407,000) and in further view of Bahney (2,195,071) for the reasons stated in the rejection above, and taken in further view of Komiyama (JP 53-019135), who teaches that a molten metal liquid level probe desirably can make electrical contact with a molten metal through the surface of the metal and through conductive walls of the molten metal container, and it would have been obvious to incorporate these suggestions into a liquid level sensor of the type suggested by De Lange.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Richard Bueker
Primary Examiner
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